<u>IN THE CLAIMS</u>

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1.   (Currently Amended) An image processing apparatus comprising:

extraction means for extracting a text area from multi-valued image data, and generating position data of the text area;

color computation means for ~~generating~~ <u>binarizing the multi-valued</u> <u>image data in the text area to generate</u> representative color data of a text portion in the text area;

generation means for generating text image data expressed by the representative color in the text area;

conversion means for generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

first compression means for compressing the non-text multi-valued image data; and

second compression means for compressing the text image data,

wherein said color computation means generates one representative color data for each text area~~, and~~

~~said generation means comprises means for binarizing the~~ ~~multi-valued image data in the text area.~~

2.   (Original) The apparatus according to claim 1, wherein said first compression means executes a compression process complying with JPEG compression.

3.   (Original) The apparatus according to claim 1, wherein said second compression means executes a compression process complying with MMR compression.

4.   (Original) The apparatus according to claim 1, further comprising third compression means for coupling the position data, representative color data, and outputs from said first and second compression means, and compressing the coupled data by a reversible compression method.

5.   (Original) The apparatus according to claim 1, further comprising inclusive image generation means for generating inclusive image data including a plurality of text areas having similar representative color data, and position data of the inclusive image, and

wherein said second compression means compresses the inclusive image data as the text image data.

6.   (Original) The apparatus according to claim 1, further comprising inclusive image generation means for generating inclusive image data including a plurality of text areas having similar representative color data, and position data of the inclusive image, and

wherein said second compression means compresses the inclusive image data as the text image data.

7.   (Original) The apparatus according to claim 6, wherein said inclusive image generation means includes:

determination means for determining the text areas to be included in the inclusive image on the basis of compression efficiency.

8.   (Original) The apparatus according to claim 7, wherein said inclusive image generation means includes:

size computation means for computing a first size obtained upon generating and compressing an inclusive image including first and second text areas, and a second size obtained upon individually compressing the first and second text areas without generating the inclusive image, and

when the first size is smaller than the second size, the inclusive image including the first and second text areas is generated.

9.   (Currently Amended) An image processing apparatus for expanding an image compressed by an image processing apparatus claimed cited in claim 1, comprising:

first expansion means for expanding the non-text multi-valued image data compressed by said first compression means;

second expansion means for expanding the text image data compressed by said second compression means; and

image combining means for receiving the position data and representative color data, and generating the multi-valued image data on the basis of the text image data and non-text multi-valued image data.

10.   (Currently Amended) An image processing apparatus comprising:

extraction means for extracting a text area from multi-valued image data, and generating position data of the text area;

color computation means for generating representative color data of a text portion in the text area;

generation means for generating text image data expressed by the representative color in the text area;

conversion means for generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

first compression means for compressing the non-text multi-valued image data[[;]],

second compression means for compressing the text image data; and

resolution conversion means for generating reduced non-text multi-valued image data by lowering a resolution of the non-text multi-valued image data; and

control means for controlling a resolution conversion parameter in said resolution conversion means,

wherein said first compression means compresses the reduced non-text multi-valued image data.

11.   (Cancelled)

12.   (Currently Amended) The apparatus according to claim ++ 10, wherein said control means controls upon computing orthogonal transforms of the non-text multi-valued image data the resolution conversion parameter to convert the non-text multi-valued image data which has a small high-frequency component to have a lower resolution than the non-text multi-valued image data having a large high-frequency component.

13.   (Currently Amended) The apparatus according to claim ~~11~~ 10, wherein said control means applies a differential filter to the non-text multi-valued image data, and controls the resolution conversion parameter to convert the non-text multi-valued image data which has a small total of absolute values to have a lower resolution than the non-text multi-valued image data having a large total of absolute values.

14.   (Original) The apparatus according to claim 10, wherein said first compression means executes a compression process complying with JPEG compression.

15.   (Original) The apparatus according to claim 10, wherein said second compression means executes a compression process complying with MMR compression.

16.   (Original) The apparatus according to claim 10, further comprising third compression means for coupling the position data, representative color data, and outputs from said first and second compression means, and compressing the coupled data by a reversible compression method.

17.   (Original) The apparatus according to claim 10, further comprising inclusive image generation means for generating inclusive image data including a plurality of text areas having similar representative color data, and position data of the inclusive image, and

wherein said second compression means compresses the inclusive image data as the text image data.

18.   (Original) The apparatus according to claim 17, wherein said inclusive image generation means includes:

determination means for determining the text areas to be included in the inclusive image on the basis of compression efficiency.

19.   (Original) The apparatus according to claim 18, wherein said inclusive image generation means includes:

size computation means for computing a first size obtained upon generating and compressing an inclusive image including first and second text areas, and a second size obtained upon individually compressing the first and second text areas without generating the inclusive image, and

when the first size is smaller than the second size, the inclusive image including the first and second text areas is generated.

20.   (Original) An image processing apparatus for expanding an image compressed by an image processing apparatus cited in claim 10, comprising:

first expansion means for expanding the non-text multi-valued image data compressed by said first compression means;

second expansion means for expanding the text image data compressed by said second compression means; and

image combining means for receiving the position data and representative color data, and generating the multi-valued image data on the basis of the text image data and non-text multi-valued image data.

21.   (Currently Amended) An image processing apparatus comprising:

extraction means for extracting a text area from multi-valued image data, and generating position data of the text area;

color computation means for generating representative color data of a text portion in the text area;

generation means for generating text image data expressed by the representative color in the text area;

conversion means for generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

first compression means for compressing the non-text multi-valued image data; and

second compression means for compressing the text image data,

wherein said color computation means includes:

color palette generation means for generating at least one color palette as the representative color data by executing a color reduction process of a text image in the text area, and

said generation means includes:

color-reduced image generation means for generating color-reduced image data corresponding to the color palette.

22.   (Currently Amended) The apparatus according to claim 21, wherein said color-reduced image generation means

outputs binary image data of the text area as the reduced-image data for the text area in which the number of palettes generated by said color palette generation means is 1, and

generates as the reduced-image data (n+1)-valued image data, [[(]] n being is a natural number not less than 2[[)]], indicating correspondence between

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respective pixels, and color palettes or a non-text image portion for the text area in which the number of palettes generated by said color palette generation means is n.

23.   (Original) The apparatus according to claim 22, wherein said second compression means uses different compression methods for the binary image data and (n+l)-valued image data.

24.   (Original) The apparatus according to claim 23, wherein said second compression means executes a compression process complying with MMR compression for the binary image data, and executes compression process complying with ZIP compression for the (n+l)-valued image data.

25.   (Original) The apparatus according to claim 21, wherein said first compression means executes a compression process complying with JPEG compression.

26.   (Original) The apparatus according to claim 21, wherein said second compression means executes a compression process complying with MMR compression.

27.   (Original) The apparatus according to claim 21, further comprising third compression means for coupling the position data, representative color data, and outputs from said first and second compression means, and compressing the coupled data by a reversible compression method.

28.   (Original) The apparatus according to claim 21, further comprising reduced-image segmentation means for generating binary image data for each color palette

from the reduced-image data in one text area in which a plurality of color palettes are generated, and

wherein said second compression means compresses the binary image data for respective color palettes, which are generated by said reduced-image segmentation means.

29.   (Original) The apparatus according to claim 21, further comprising:

reduced-image segmentation means for generating new text areas including binary text image data for respective color palettes from the reduced-image data in one text area in which a plurality of color palettes are generated; and

inclusive image generation means for generating inclusive image data including a plurality of text areas having similar color palettes, and position data of the inclusive image, and

wherein said second compression means compresses the inclusive image data as the text image data.

30.   (Original) The apparatus according to claim 29, wherein said inclusive image generation means includes:

determination means for determining the text areas to be included in the inclusive image on the basis of compression efficiency.

31.   (Original) The apparatus according to claim 30, wherein said inclusive image generation means includes:

size computation means for computing a first size obtained upon generating and compressing an inclusive image including first and second text areas, and a

second size obtained upon individually compressing the first and second text areas without generating the inclusive image, and

when the first size is smaller than the second size, the inclusive image including the first and second text areas is generated.

32.   (Currently Amended) An image processing apparatus for expanding an image compressed by an image processing apparatus claimed ~~cited~~ in claim 21, comprising:

first expansion means for expanding the non-text multi-valued image data compressed by said first compression means;

second expansion means for expanding the text image data compressed by said second compression means; and

image combining means for receiving the position data and representative color data, and generating the multi-valued image data on the basis of the text image data and non-text multi-valued image data.

33.   (Original) An image processing apparatus comprising:

extraction means for extracting a text area from multi-valued image data, and generating position data of the text area;

color computation means for generating representative color data of a text portion in the text area;

generation means for generating text image data expressed by the representative color in the text area;

conversion means for generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

first compression means for compressing the non-text multi-valued image data; and

second compression means for compressing the text image data,

wherein said generation means includes binarization means for applying a differential filter to the multi-valued image data, computing edge amounts of pixels that form the multi-valued image with neighboring pixels, and binarizing the data on the basis of the edge amounts.

34. (Original) The apparatus according to claim 33, wherein said first compression means executes a compression process complying with JPEG compression.

35. (Original) The apparatus according to claim 33, wherein said second compression means executes a compression process complying with MMR compression.

36. (Original) The apparatus according to claim 33, further comprising third compression means for coupling the position data, representative color data, and outputs from said first and second compression means, and compressing the coupled data by a reversible compression method.

37. (Original) The apparatus according to claim 33, further comprising inclusive image generation means for generating inclusive image data including a plurality of text areas having similar representative color data, and position data of the inclusive image, and

wherein said second compression means compresses the inclusive image data as the text image data.

38. (Original) The apparatus according to claim 37, wherein said inclusive image generation means includes:

determination means for determining the text areas to be included in the inclusive image on the basis of compression efficiency.

39. (Original) The apparatus according to claim 38, wherein said inclusive image generation means includes:

size computation means for computing a first size obtained upon generating and compressing an inclusive image including first and second text areas, and a second size obtained upon individually compressing the first and second text areas without generating the inclusive image, and

when the first size is smaller than the second size, the inclusive image including the first and second text areas is generated.

40. (Original) An image processing apparatus for expanding an image compressed by an image processing apparatus cited in claim 33, comprising:

first expansion means for expanding the non-text multi-valued image data compressed by said first compression means;

second expansion means for expanding the text image data compressed by said second compression means; and

image combining means for receiving the position data and representative color data, and generating the multi-valued image data on the basis of the text image data and non-text multi-valued image data.

41.   (Original) An image processing apparatus comprising:

extraction means for extracting a text area from multi-valued image data, and generating position data of the text area;

color computation means for generating representative color data of a text portion in the text area;

generation means for generating text image data expressed by the representative color in the text area;

conversion means for generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

first compression means for compressing the non-text multi-valued image data; and

second compression means for compressing the text image data,

wherein said conversion means comprises:

segmentation means for segmenting the multi-valued image into blocks each having a predetermined size; and

discrimination means for discriminating if each of the blocks segmented by said segmentation means includes a text portion, and

when said discrimination means discriminates that the block of interest includes a text portion, an average value of colors of a portion other than the text portion in the block of interest is computed, and the multi-value image data of the text portion is converted using the computed average color value.

42.   (Original) The apparatus according to claim 41, wherein said first compression means executes a compression process complying with JPEG compression.

43.　(Original) The apparatus according to claim 41, wherein said second compression means executes a compression process complying with MMR compression.

44.　(Original) The apparatus according to claim 41, further comprising third compression means for coupling the position data, representative color data, and outputs from said first and second compression means, and compressing the coupled data by a reversible compression method.

45.　(Original) The apparatus according to claim 41, further comprising inclusive image generation means for generating inclusive image data including a plurality of text areas having similar representative color data, and position data of the inclusive image, and

wherein said second compression means compresses the inclusive image data as the text image data.

46.　(Original) The apparatus according to claim 45, wherein said inclusive image generation means includes:

determination means for determining the text areas to be included in the inclusive image on the basis of compression efficiency.

47.　(Original) The apparatus according to claim 46, wherein said inclusive image generation means includes:

size computation means for computing a first size obtained upon generating and compressing an inclusive image including first and second text areas, and a second size obtained upon individually compressing the first and second text areas without generating the inclusive image, and

when the first size is smaller than the second size, the inclusive image including the first and second text areas is generated.

48.   (Original) An image processing apparatus for expanding an image compressed by an image processing apparatus cited in claim 41, comprising:

first expansion means for expanding the non-text multi-valued image data compressed by said first compression means;

second expansion means for expanding the text image data compressed by said second compression means; and

image combining means for receiving the position data and representative color data, and generating the multi-valued image data on the basis of the text image data and non-text multi-valued image data.

49.   (Currently Amended) An image processing method comprising:

an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a color computation step, of generating one representative text color data of a text portion for each text area;

a generation step, of generating text image data by binarizing the multi-valued image data in the text area;

a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a first compression step, of compressing the non-text multi-valued image data; and

a second compression step, of compressing the text image data.

50.   (Currently Amended) An image processing method comprising:

an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a color computation step, of generating representative text color data for each text area;

a generation step, of generating text image data in the text area;

a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a resolution conversion step, of generating reduced non-text multi-valued image data by lowering a resolution of the non-text multi-valued image data;

a control step, of controlling a resolution conversion parameter in said resolution conversion step;

a first compression step, of compressing the reduced non-text multi-valued image data; and

a second compression step, of compressing the text image data.

51.   (Currently Amended) An image processing method comprising:

an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a color palette generation step, of generating at least one color palette by executing a color reduction process of a text image in the text area;

a generation step, of generating color-reduced text image data corresponding to the color palette;

a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a first compression step, of compressing the non-text multi-valued image data; and

a second compression step, of compressing the text image data.

52.   (Currently Amended) An image processing method comprising:

an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a color computation step, of generating representative text color data of a text portion for each text area;

a generation step, of generating text image data;

a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a first compression step, of compressing the non-text multi-valued image data; and

a second compression step, of compressing the text image data[[.]],

wherein said generation step includes a binarization step, of applying a differential filter to the multi-valued image data, computing edge amounts of pixels that form the multi-valued image with neighboring pixels, and binarizing the data on the basis of the edge amounts.

53.   (Currently Amended) An image processing method comprising:

an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a color computation step, of generating one representative text color data of a text portion for each text area;

a generation step, of generating text image data by binarizing the multi-valued image data in the text area;

a segmentation step, of segmenting the multi-valued image into blocks each having a predetermined size; ~~and~~

a discrimination step, of discriminating if each of the blocks segmented includes a text portion;

a conversion step, of computing an average value of colors of a portion other than the text portion in the block of interest and converting the multi-value image data of the text portion by using the computed average color value, when <u>it is discriminated in</u> said discrimination ~~means discriminates~~ <u>step</u> that the block of interest includes a text portion;

a first compression step, of compressing the non-text multi-valued image data; and

a second compression step, of compressing the text image data.

54.   (Currently Amended) A computer readable memory that stores a compression program for compressing multi-valued image data,

said compression program comprising:

a code of an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a code of a color computation step, of generating one representative text color data of a text portion for each text area;

a code of a generation step, of generating text image data by binarizing the multi-valued image data in the text area;

a code of a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a code of a first compression step, of compressing the non-text multi-valued image data; and

a code of a second compression step, of compressing the text image data.

55.   (Currently Amended) A computer readable memory that stores a compression program for compressing multi-valued image data,

said compression program comprising:

a code of an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a code of a color computation step, of generating representative text color data for each text area;

a code of a generation step, of generating text image data in the text area;

a code of a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a code of a resolution conversion step, of generating reduced non-text multi-valued image data by lowering a resolution of the non-text multi-valued image data;

a code of a first compression step, of compressing the reduced non-text multi-valued image data; and

a code of a second compression step, of compressing the text image data.

56.   (Currently Amended) A computer readable memory that stores a compression program for compressing multi-valued image data,

said compression program comprising:

a code of an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a code of a color palette generation step, of generating at least one color palette by executing a color reduction process of a text image in the text area;

a code of a generation step, of generating color-reduced text image data corresponding to the color palette;

a code of a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a code of a first compression step, of compressing the non-text multi-valued image data; and

a code of a second compression step, of compressing the text image data.

57.   (Currently Amended) A computer readable memory that stores a compression program for compressing multi-valued image data,

said compression program comprising:

a code of an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a code of a color computation step, of generating representative text color data of a text portion for each text area;

a code of a generation step, of generating text image data;

a code of a conversion step, of generating non-text multi-valued image data by converting multi-valued image data of the text portion using multi-valued image data of a portion other than the text portion;

a code of a first compression step, of compressing the non-text multi-valued image data; and

a code of a second compression step, of compressing the text image data,[[.]]

wherein said generation step includes a binarization step, of applying a differential filter to the multi-valued image data, computing edge amounts of pixels that form the multi-valued image with neighboring pixels, and binarizing the data on the basis of the edge amounts.

58.   (Currently Amended) A computer readable memory that stores a compression program for compressing multi-valued image data,

said compression program comprising:

a code of an extraction step, of extracting a text area from multi-valued image data, and generating position data of the text area;

a code of a color computation step, of generating one representative text color data of a text portion for each text area;

a code of a generation step, of generating text image data by binarizing the multi-valued image data in the text area;

a code of a segmentation step, of segmenting the multi-valued image into blocks each having a predetermined size; ~~and~~

a code of a discrimination step, of discriminating if each of the blocks segmented includes a text portion;

a code of a conversion step, of computing an average value of colors of a portion other than the text portion in the block of interest and converting the multi-value image data of the text portion by using the computed average color value, when it is <u>discriminated in</u> said discrimination <u>step</u> ~~means discriminates~~ that the block of interest includes a text portion;

a code of a first compression step, of compressing the non-text multi-valued image data; and

a code of a second compression step, of compressing the text image data.